

USSR

\*CHERNYAVSKAYA, S. G., et al., Metallovedeniye, No 9, Sep 72, pp 66-67

temperature is due to a polymorphous gamma-alpha transformation, as opposed to the alpha-gamma transformation at the lower temperatures. 4 figures, 2 bibliographic references.

2/2

USSR

Magnesium

1

VASIL'YEV, G. S., YEFIMENKO, G. G., KOVALEV, D. A., ~~SULIMENKO, YE. I.~~, and  
GAMAZOVA, L. B., Dnepropetrovsk Metallurgical Institute

"Effect of Magnesium on the Process of Sintering Briquettes Made of an Iron-  
ore Agglomerate Charge in an Oxidizing Atmosphere"

Novokuznetsk, IVUZ-Chernaya Metallurgiya, No 6, 1971, pp 23-30

Abstract: A study was made of the effect of magnesium additives on the pro-  
cess of sintering and on the quality and phase composition of a briquetted  
agglomeration charge for its solid-phase sintering without fuel in an oxidizing  
atmosphere.

The introduction of  $MgO$  into a charge prevents oxidation of magnetite to  
hematite due to its introduction into the magnetite lattice and the sub-  
stitution of  $FeO$  for  $MgO$  with the formation of solid solutions of  $MgO$  in  
 $Fe_3O_4$ . Dissolving of magnetite in magnesium ferrite increases the system's  
melting point.

Strengthening of samples is manifested by producing a denser structure  
due to the lack of a change in volume as a result of oxidation of magnetite  
to hematite as well as the formation of minerals, containing  $MgO$ , which possess  
a coefficient of thermal expansion close to the coefficient of its related  
minerals. Two figures, 5 tables, 5 bibliographical references.

1/1

Heat, Combustion, Detonation

USSR

UDC 662.813.2+536.46

BELYAYEV, A. F., SUKOYAN, M. K., KOROTKOV, A. I., SULIMOV, A. A.

"Concerning the Consequences of the Penetration of Combustion Into a Single Pore"

Novosibirsk, Fizika Goreniya i Vzryva, No 2, June 1970, pp 166-171

Abstract: It has been shown in other references that the penetration of combustion into a two-dimensional unit pore (crack) of powder or high explosive brings about, under certain conditions, excess pressure in it. The initial effect exerted by the excess pressure upon the sides of the crack can, under certain conditions, bring about enlargement of the crack, which condition is manifested in a depth increase. In the article are set forth results of measurement and calculation of the value of excess pressure; in addition, consideration is given to special features of the growth of burning cracks. The value of the excess pressure in an undeformed two-dimensional pore is obtained. The pressure increase in a burning pore undergoing deformation is calculated. The growth of burning cracks acted upon by excess pressure is examined.

1/1

USSR

UDC 629.7.036.54--66,536.46

SULIMOV, A. A., and KOROTKOV, A. I.

"The Combustion of Porous Substances"

Odessa, 11-ya Vses. Konf. po Vopr. Ispareniya, Goraniya i Gaz. Dinamiki Dispersn. Sistem, 1972 -- Sbornik (11-th All-Union Conference on Problems of the Evaporation, Combustion, and Gas Dynamics of Dispersed Systems, 1972 -- Collection of Works), 1972, pp 40-41 (from Referativnyy Zhurnal -- Aviatsionnyye i Raketnyye Dvigateli, No 1, 1973, Abstract No 1.34.146 Resume)

Translation: An experimental study is conducted of the rules governing the layer-by-layer combustion of porous systems at constant atmospheric pressure (ammonium perchlorate with a combustible or catalytic additive, pyroxylin). A study was made of the relationship of the mass rate and critical diameter of combustion to the relative density of the substance ( $\sigma$ ); measurements were made of the temperature distribution in the condensed phase and in the gas phase, as well as of the pressure change in the base part of a burning porous charge. It was established that unlike the case of fusible secondary explosives, in this case the mass rate of combustion increases, and the critical diameter of combustion decreases. The entire aggregate of the data obtained in the project is explained from a single point of view, according to which the essential

1/2

USSR"

SULIMOV, A. A., and KOROTKOV, A. I., 11-th All-Union Conference on Problems of the Evaporation, Combustion, and Gas Dynamics of Dispersed Systems, 1972, -- Collection of Works), 1972, pp 40 -41

role in the combustion of the investigated systems is played by convective heat transfer caused by the penetration of gaseous combustion products into the pores. A model of the combustion of a porous system is discussed, with account taken of distortion of the surface and nonunidimensionality of the combustion zone.

2/2

- 19 -

1/3 011 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--THERMAL FRACTIONATION OF DNA ACCORDING TO BASE COMPOSITION -U-  
AUTHOR--(03)-MAZIN, A.L., ~~SULIMOVA, G.YE.~~, VANYUSHIN, B.F.  
COUNTRY OF INFO--USSR  
SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 2, PP 265-274  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--DNA, FREEZING, CHROMATOGRAPHY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1983/1395 STEP NO--UR/0463/70/004/002/0265/0274  
CIRC ACCESSION NO--APO054264  
UNCLASSIFIED

2/3 011

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0054264

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

A PROCEDURE HAS BEEN ELABORATED FOR THERMAL FRACTIONATION OF DNA ACCORDING TO BASE COMPOSITION. THE METHOD CONSISTS OF THREE MAIN CONSECUTIVE STAGES: (1) PARTIAL DENATURATION OF DNA AT A GIVEN TEMPERATURE (IN THE DNA MELTING RANGE) IN 0.01 M PHOSPHATE BUFFER, PH 6.8. (2) FIXATION OF PARTIALLY DENATURED STAGE OF DNA BY QUICK FREEZING AT THE LIQUID NITROGEN TEMPERATURE WITH SUBSEQUENT THAWING AT ROOM TEMPERATURE IN THE PRESENCE OF 1PERCENT FORMALDEHYDE. (3) SEPARATION OF NATIVE AND DENATURED DNA MOLECULES BY MEANS OF CHROMATOGRAPHY ON HYDROXYLAPATITE IN THE PRESENCE OF 0.5PERCENT FORMALDEHYDE. THE ABOVE METHOD OF FIXATION OF PARTIALLY DENATURED STAGE OF DNA EXCLUDES RENATURATION OF TOTALLY DENATURED MOLECULES. CHROMATOGRAPHY ON HYDROXYLAPATITE ENSURES QUANTITATIVE SEPARATION OF NATIVE AND DENATURED DNA: SINGLE STRANDED DNA ARE ELUTED AT A LOWER CONCENTRATION (0.12 M) OF PHOSPHATE BUFFER AS COMPARED TO DOUBLE STRANDED DNA (0.22 M). THE QUANTITY (F) OF DENATURED DNA HAS A LINEAR DEPENDENCE ON THE DENATURATION TEMPERATURE (T) AND CAN BE DESCRIBED BY THE REGRESSION EQUATION  $F = 7.4 T - 431.8$ . BY THE METHOD OF STEP FRACTIONATION 11 FRACTIONS OF VARIOUS BASE COMPOSITION WERE ISOLATED FROM TOTAL ULTRASONIC TREATED CALF THYMUS DNA (PERCENTAGE OF GC VARIES FROM 30 TO 60). THE RELATIONSHIP BETWEEN THE COMPOSITION (PERCENTAGE OF GC) OF THESE FRACTIONS AND THE MEAN TEMPERATURE AT WHICH THEY WERE ISOLATED (T) IS CLOSE TO LINEAR AND MAY BE DESCRIBED BY THE FOLLOWING EQUATION:  $GC \text{ (MOLAR PER CENT)} = 2.2 T - 100.6$ . THE REGRESSION COEFFICIENT IS 2.2PERCENT GC PER 1DEGREE.

UNCLASSIFIED

3/3 011

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0054264

ABSTRACT/EXTRACT--THUS, THE ABOVE PROCEDURE ALLOWS TO FRACTIONATE DNA  
MOLECULES OR THEIR FRAGMENTS IN ACCORDANCE WITH THEIR MELTING  
TEMPERATURES AND, HENCE, IN STRICT CONFORMITY WITH THEIR BASE  
COMPOSITION.

UNCLASSIFIED



USSR

UDC: 51:621.391

BERMANT, N. A., SEMENOV, L. K., SULITSKIY, V. N.

"Mathematical Models and Educational Planning"

Moscow, Matematicheskiye modeli i planirovaniye obrazovaniya  
(cf. English above), "Nauka", 1972, 112 pp, ill. 34 k. (from  
RZh-Kibernetika, No 10, Oct 72, abstract No 10V598 K)

[No abstract]

1/1

Planning +  
Control sys

5535

March, 1972

PLANNING AND CONTROL IN A PERSONNEL TEAM

Article by M. A. S.

... Part 1, 1977, pp. 128-130] ...

This report is devoted to a discussion of an approach to the construction of a mathematical model of planning and control of the demand for specialising.

The concept of an  $n$ -dimensional space of states of the personnel system  $X(X_1, X_2, \dots, X_n)$  is introduced in the report, where  $X_i$  is the number of specialists of the  $i$ th qualification level. The dynamics of the personnel system are described by the system of difference equations

$$\sum_{i=1}^n (c_i + 1) = AX(c)$$

where  $X(t)$  is the state of the system at the  $t$ -th year;  $X(t+1)$  is the state of the system in the  $(t+1)$ -st year into which it will convert without external effects;  $A = \|a_{ij}\|$  is the matrix of proportions of the transition of the specialists from the  $i$ -th qualification level to the  $j$ -th level.

The demand for specialists  $i$  years in advance is given by the series  $X_i^j(t)$ ,  $i = 0, \dots, \lambda$ . Then the control in the system for meeting the demand for specialists can be defined in the following way:

$$U(z) = X^{\#}(z+1) - \lambda X(z).$$

in the form of making the demand for specialists can be represented as follows -- the personnel working in the departments -- the IN module -- the personnel in the control element -- the SVI module -- is the decision-making module. The control inputs  $u$  are the number of specialists hired and released. In addition, percentage control (VC) is possible in the system. Its variation of the conditions of translation of the matrix A and corresponds to the vector level of output.

USSR

UDC 517.544

SULKHANISHVILI, G. I., Tbilisi Mathematics Institute imeni A. M. Razmadze,  
Georgian SSR Academy of Sciences

"The Unique Solvability of a Dirichlet Difference Problem for an Elliptical System"

Tbilisi, Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 62, No 3, Jun 71,  
pp 525-528

Abstract: The author studies the conditions for the unique solvability of a Dirichlet difference problem for an elliptical system

$$A_1 \frac{\partial^2 u}{\partial x_1^2} + \dots + A_p \frac{\partial^2 u}{\partial x_p^2} - A_0 u = f(x_1, \dots, x_p).$$

He is also concerned with the tensor product theory of matrices. He gives the necessary and sufficient conditions for the unique solvability of the system and examines two different cases: (I)  $A_0 = 0$ . Here because of the inequality  $\det(A_1 \xi_1^2 + \dots + A_p \xi_p^2) \neq 0$  it follows from the equation

$$\det A_{n_1 \dots n_p} = \overbrace{(t_1, \dots, t_p) \in R_1 \times \dots \times R_p}^{(-1)^m \det(A_1 |t_1| + \dots + A_p |t_p| + A_0)}, \quad (1)$$

1/2

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USSR

SULKHANISHVILI, G. I., Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 62, No 3, Jun 71, pp 525-528

that  $\det A_{n_1, \dots, n_p} \neq 0$  and the system  $A_{n_1, \dots, n_p} \bar{n}^{n_1, \dots, n_p} = f^{n_1, \dots, n_p}$ . (2)

is uniquely solvable for any right-hand part. (II)  $A_0$  is non-negative and the matrices  $A_k (k = \overline{1, p})$  are positively determined. Then  $\det (A_1 \mid t_1 \mid + \dots + A_k \mid t_p \mid + A_0) > 0$  for and  $t_1, \dots, t_p (t_1^2 + \dots + t_p^2 > 0)$ , and according to equation (1), system (2) is uniquely solvable. The article contains 4 bibliographic entries.

SULKHANISHVILI, G.I.

mathematics

SULKHANISHVILI, G.I.

# TECHNICAL TRANSLATION

NSIC-RT-22-14-72

ENGLISH TITLE: THE SOLUTION OF A GENERALIZED CAUCHY-DIRICHLET PROBLEM FOR A LINEAR HYPERBOLIC EQUATION

FOREIGN TITLE:

O RESHENII OBOBSHCHENNOI ZADACHI CAUCHI-DIRICHLETA DLYA LINEINOGO POLIKLORICHESKOGO URAVNENIYA

AUTHOR:

G. I. SULKHANISHVILI

SOURCE:

DIFFERENTIAL'NYE URAVNENIYA, VOL. 5, DEC 1969, P 2220-2226

Translated for NSIC by LEO KATNER ASSOCIATES, REDWOOD CITY, CAL.

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USSR

SULKHANISHVILI I. G.

UDC 577.4

"Structural Synthesis of Automata from Two-Input Logical Elements with Delay"

Tr. Vychisl. tsentra. AN GruzSSR (Works of the Computation Center of the  
Georgian SSR Academy of Sciences), 1972, Vol 11, No 1, pp 121-127 (from RZh-  
Kibernetika, No 7, Jul 72, Abstract No 7V352)

No abstract

1/1

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USSR

UDC 577.4

SULKHANISHVILI, I. G.

"Improving the Algorithm for Structural Synthesis of Automata"

Tr. Vychisl. tsentra. AN GruzSSR (Works of the Computation Center of the Georgian SSR Academy of Sciences), 1972, Vol 11, No 1, pp 128-134 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V345)

No abstract

1/1

- 11 -

1/2 020  
UNCLASSIFIED  
PROCESSING DATE--09OCT70  
TITLE--CALCULATION OF THE OPTIMAL TIME OF THERAPEUTIC USE OF RADIOISOTOPE  
SOURCE OF RADIATION -U-  
AUTHOR--(03)--SULKIN, A.G., KOCHETOVA, G.P., BURISOV, A.YE.  
COUNTRY OF INFO--USSR  
SOURCE--MEDITSINSKAYA RADIOLOGIYA, 1970, VOL 15, NR 4, PP 63-66  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--RADIOISOTOPE, RADIATION SOURCE, MEDICAL NUCLEAR APPLICATION,  
RADIOTHERAPY, COBALT ISOTOPE, MEDICAL EQUIPMENT/EUROKUS MEDICAL  
EQUIPMENT, (U)LUCH 1 MEDICAL EQUIPMENT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1990/0958  
STEP NO--UR/0241/70/015/004/0063/0066  
CIRC ACCESSION NO--AP0109115  
UNCLASSIFIED



2/2 020

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0109115

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE IS CONCERNED WITH THE DETERMINATION OF THE OPTIMAL (FROM THE VIEWPOINT OF MINIMAL COST OF IRRADIATION SEANCE) TIME OF USING THE RADIOISOTOPE SOURCE IN GAMMATHERAPEUTIC APPARATUS. THE TECHNIQUE OF THE CALCULATION AND THE MAIN RATIOS AND FORMULAS ARE GIVEN. A TABLE FOR FACILITATING THE PRACTICAL USE OF THE PROPOSED TECHNIQUE IS DESCRIBED. THE SAMPLES OF CALCULATION OF THE OPTIMAL TIME OF USING CO PRIME60 SOURCES IN TELEGAMMATHERAPEUTIC APPARATUS LUCH-1 AND ROKUS ARE PRESENTED. THE AUTHORS ANALYZE THE DEPENDENCE BETWEEN THE OPTIMAL TIME AND DURATION OF THE IRRADIATION SEANCE, THE TIME FOR AUXILIARY AND PREPARATORY MEASURES, AND THE WORK SHIFTS AND THE THERAPEUTIC ROOM. FACILITY:  
VSESOUZNY N-1 INSTITUT RADIATIONNOY TEKHNIKI.

UNCLASSIFIED

USSR

UDC:620.179.152

FIRSTOV, V. G., MAYOROV, A. N., SUL'KIN, A. G., CHEREVATENKO, G. A. and YAKSHIN, V. V.

"New Sharp-Focus Iridium-192 Sources for Radiography"

Defektoskopiya, No. 3, 1970, pp. 95-100

Abstract: Some problems involved in the application of sharp-focus iridium-192 sources in the radiography of industrial products are studied. The expediency of using these sources for radioscopy of welded tubes is demonstrated, particularly for testing in difficulty accessible locations at short focal lengths. The results produced are explained using data on quantities comparing the unsharpness of gamma images and spectral distributions from standard and sharp-focus sources. The use of sharp-focus gamma radiation sources of this type allows radiographic testing of industrial products at focal distances 3-times shorter than when standard sources are used, expanding the boundaries of application of gamma defectoscopy of welded joints. The sensitivity of radiography using

1/2

USSR

UDC:620.179.152

FIRSTOV, V. G., MAYOROV, A. N., SUL'KIN, A. G., CHEREVATENKO, G. A.,  
YAKSHIN, V. V., Defektoskopiya, No. 3, 1970, pp. 95-100

sharp-focus sources is improved in comparison with standard sources, both as a result of the decrease in the geometric unsharpness of gamma images and due to improvement of the spectral distribution of the radiation.

2/2

- 104. -

1/2 021  
UNCLASSIFIED  
TITLE—STUDY OF THE INTERACTION BETWEEN IMPURITIES IN SILICON WITH THE  
HELP OF P-N JUNCTIONS -U-  
AUTHOR—(02)—SAIDOV, M.S., SULMANOV, I.  
COUNTRY OF INFO—USSR  
SOURCE—FIZIKA I TEKH. POLUPROV., FEB. 1970, 4 (2), 256-259  
DATE PUBLISHED—FEB70  
SUBJECT AREAS—PHYSICS  
TOPIC TAGS—PN JUNCTION, SEMICONDUCTOR IMPURITY, VOLT AMPERE  
CHARACTERISTIC, RECRYSTALLIZATION, INDIUM, CADMIUM, COPPER, TIN  
CONTROL MARKING—NO RESTRICTIONS  
DOCUMENT CLASS—UNCLASSIFIED  
PROXY REEL/FAME—2000/1284  
STEP NO—UR/0449/70/004/002/0256/0259  
CIRC ACCESSION NO—AP0124935  
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124935

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SEE ALSO PRECEDING ABSTRACT. THE INTERACTION OF VARIOUS IMPURITIES IN SI WAS STUDIED BY ANALYSING THE V-A CURVES OF P-N JUNCTIONS FORMED IN SI AS A RESULT OF THE INFUSION OF VARIOUS ADDITIVES. THUS THE INFUSION OF SN AND SN ALLOYS INTO DEGENERATE N TYPE SI PRODUCED AN S SHAPED REGION OF NEGATIVE RESISTANCE ON THE FORWARD BRANCH OF THE CHARACTERISTIC. THE INTRODUCTION OF IN, CD, AND CU TOGETHER WITH SN CHANGED THE CUT OFF VOLTAGE OF THE V-A CHARACTERISTIC; THIS EFFECT WAS ATTRIBUTED TO THE GROWTH OF A RECRYSTALLIZED LAYER OF SI, THE CONDITIONS OF GROWTH DEPENDING ON THE NATURE OF THE ADDITIVES. 9 REF.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--METHODS OF PRE ESTIMATION OF OVERHAUL COSTS -U-  
AUTHOR--(03)-VASHCHENKO, V.K., DERKACH, G.M., SULPOVAR, L.B.  
COUNTRY OF INFO--USSR  
SOURCE--STANDARTY I KACHESTVO, 1970, NR 5, PP 76-77  
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, BEHAVIORAL AND SOCIAL  
SCIENCES  
TOPIC TAGS--ENGINE MAINTENANCE, ECONOMIC INCENTIVE, COST ESTIMATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1997/1551

STEP NO--UR/0422/70/000/005/0076/0077

CIRC ACCESSION NO--AP0120330

UNCLASSIFIED

2/2 015

CIRC ACCESSION NO--AP0120330  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--23OCT7

ABSTRACT. THE ARTICLE CONSIDERS THE METHODS OF PRELIMINARY ESTIMATION OF EXPENSIS FOR ENGINE OVERHAUL REPAIRS. THE EXPENSES ARE REGARDED AS INFLUENCED BY THREE GROUPS OF FACTORS, VIZ., THOSE DEPENDENT ON THE DESIGN, MANUFACTURING METHODS, AND OPERATIONAL CONDITIONS. THE DIFFERENT LEVELS OF INFLUENCE OF THESE FACTORS UPON TH OVERHAUL COSTS SUBDIVIDE THE EXPENSES INTO CONVENTIONALLY CONSTANT AND CONVENTIONALLY VARIABLE ONES. FORMULAS FOR CALCULATION OF THE EXPENSES ARE GIVEN IN THE ARTICLE.

UNCLASSIFIED

2/2 007

CIRC ACCESSION NO--AP0100813  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT. THE EVALUATION OF VARIOUS  
DEVELOPMENTS IN STANDARDIZATION SHOULD BE SUBSTANTIATED BY ECONOMIC  
CRITERIA. THE ECONOMIC CRITERIA ARE PROVED TO BE ADVANTAGEOUS. THE  
EFFICIENCIES OF CERTAIN TRENDS IN STANDARDIZATION AND KINDS OF STANDARDS  
ARE CALCULATED IN A NUMBER OF EXAMPLES.

UNCLASSIFIED



1

USSR

UDC 519.95

SHEVYAKOV, N. N., BRYUKHANOV, V. A., MOISEYEV, A. A., MOISEYEV, S. G.,  
and SULTAN

"Evaluation of the Coefficient of Technical Utilization of Complex Automatic Lines by the Method of Statistical Modeling"

Moscow, Avtomatizatsiya Operatsiy Proektirovaniya Protsessov Mashinostroyeniya (Automation of Operations in the Design of the Processes of Machine Building), edited by V. I. Dikushin, "Nauka," 1970, pp 123-134

Abstract: One of the most important problems that arises in designing automatic lines with a complex structure is determination of the coefficient of technical utilization. Existing methods of analytical computation are based on a number of assumptions which make it possible to decrease the order of the system of differential equations involved but which introduce a divergence from the real coefficient of technical utilization. In the present article, an algorithm for investigating this coefficient for a complex automatic line is suggested. The algorithm, which is based on the method of statistical modeling on a computer (Monte-Carlo method), makes it possible to eliminate a number of assumptions and to reduce a variety of problems to a small number of general-purpose computational procedures.

1/2

USSR

SHEVYAKOV, N. N., et al., Avtomatizatsiya Operatsiy Proyektirovaniya Protssessov Mashinostroyeniya (Automation of Operations in the Design of the Processes of Machine Building), edited by V. I. Dikushin, "Nauka," 1970, pp 123-134

As an example, the statistical modeling method is applied to a single-flow, interlinked automatic line with one adjuster and which consists of n aggregates. After briefly describing the mathematical model which they adopted and the basic assumptions which it necessitated, the authors present and explain a flowchart of the modeling algorithm.

Next, on the basis of their mathematical model, they developed an algorithm for investigating the coefficient of technical utilization of an automatic line consisting of n flows, q segments, and a adjusters. A two-page flowchart of the algorithm is presented. In order to verify the algorithm as a whole, the authors considered systems for which it is possible to find precise analytical solutions. The analytical solutions and the results obtained by modeling diverged at most by one to three percent.

2/2

1/2 015  
UNCLASSIFIED  
TITLE--REACTIONS OF 4,TRIFLUOROMETHYLAZO,4 PRIME,AMINOBIIPHENYL -U-  
PROCESSING DATE--20NOV70  
AUTHOR--(05)-ZIMIN, V.I., RYULINA, A.I., SULTANBEKOV, D.A., BARYSHEVA,  
L.I., STODNEV, YU.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(4), 812-15  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--FLUORINATED ORGANIC COMPOUND, BENZENE DERIVATIVE, ORGANIC AZO  
COMPOUND, DYE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FNAME--3006/1276  
STEP NO--UR/0366/70/006/004/0312/0315  
CIRC ACCESSION NO--AP0134950  
UNCLASSIFIED

2/2 015  
 CIRC. ACCESSION NO--AP0134950 UNCLASSIFIED  
 ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. COUPLING DIAZOTIZED P,F SUB3 CN:NC  
 SUB6 H SUB4 C SUB6 NH SUB2 (I) WITH 2,C SUB10 H SUB7 NH SUB2, M,C SUB6 H  
 SUB4 (NH SUB2) SUB2, M,C SUB6 H SUB4 (OH) SUB2, 2,C SUB10 H SUB7 OH,  
 1,3,INDANONE, AZOTOL A, OR AZOTOL IIA, GAVE A SERIES OF LIGHT FAST  
 DYES. SIMILARLY I WAS CONDENSED WITH O,HUC SUB6 H SUB4 CHO, P,ME SUB2  
 NC SUB6 H SUB4 CHO, 5,2,CL(HO)C SUB6 H SUB3 CHO, 5,2,U SUB2 N(HO)C SUB6  
 H SUB3 CHO, 3,4,O SUB2 N(HE SUB2)C SUB6 H SUB3 CHO, 2,1,HUC SUB10 H  
 SUB6 CHO, OR 4,2,PIN:N, (HO)C SUB6 H SUB3 CHO TO GIVE AZOMETHINES.

PROCESSING DATE--20NDV70

UNCLASSIFIED

USSR

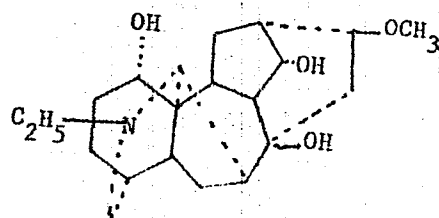
UDC 547.944/945

~~SULTANKHODZHAYEV, M. N.~~, YUNUSOV, M. S., and YUNUSOV, S. YU., Order of the Labor Red Banner Institute of the Chemistry of Natural Products, Acad. Sc. UzSSR

"Karacoline -- a Novel Diterpene Alkaloid From Aconitum Karacolicum"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 3, 1972, pp 399-400

Abstract: A new alkaloid -- Karacoline -- was isolated from the tubers of Aconitum Karacolicum with a m.p. 183-184°. This alkaloid contains an N-ethyl, a tertiary C-methyl, a methoxyl and three hydroxyl groups. Its triacetate melts at 165-169°, and the diacetate has a m.p. 119-122°. The following formula is postulated for the new compound:



1/1

- 7 -

USSR

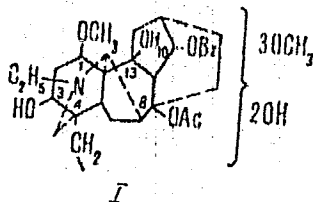
UDC: 547.944/945

SULTANKHODZHAYEV, M. N., YUNUSOV, M. S., YUNUSOV, S. Yu., "Order of the Red Banner of Labor Institute of the Chemistry of Plant Materials, Uzbek SSR Academy of Sciences

"Alkaloids of Aconitum Karakolicum"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 1, 1973, pp 127 128

Abstract: Two new alkaloids have been isolated from the alkaloid sum of Aconitum karakolicum collected in two different locales of Kirgizia. The first, from aconite tubers taken from the Terskey Alatau Mountains, has an empirical formula  $C_{34}H_{47}O_{12}N$ , melting point of 195-196°C (acetone), and is given the name "aconifin". Mass spectral analysis suggests the following partial structure:

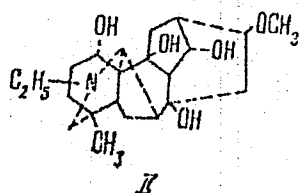


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USSR

SULTANKHODZHAYEV, M. N., et al, Khimiya Prirodnikh Soyedineniy, No 1, 1973, pp 127 128

The second alkaloid was isolated from tubers collected in the Kungey Altai Mountains and has an empirical formula  $C_{22}H_{35}O_5N$  and melting point of 222-224°C (acetone). The base has been given the name "karakolidine". Chemical analysis and IR and NMR spectroscopy suggest the following structure:



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- 6 -

USSR

UDC 541.15+535.37

SULTANKHODZHAYEVA, M. N., and SHARPATYY, V. A., Institute of Chemical Physics, Academy of Sciences USSR, Moscow

"Radiothermoluminescence of 10 M KOH Solutions"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 5, 1971, pp 1152-1155

Abstract: The low-temperature radiolysis of 10 M KOH in the presence of two compounds modeling fragments of nucleic acids, i.e., glucose and thymine, was studied on the basis of thermoluminescence that developed after the solutions had been irradiated in Ar at 77°K with gamma rays in the 0.25-14 Mrad dose range. Glucose and thymine function as acceptor of the oxidation and reduction products of H<sub>2</sub>O radiolysis, respectively. Emission at 360-800 millimicrons of the irradiated KOH solution in the 100-185°K range, which varied in intensity depending on whether or not the dark-blue solution was bleached (light with  $\lambda \geq 510$  millimicrons or that from an incandescent bulb was used for bleaching), showed two peaks, at 112°K (peak I) and 167°K (peak II), respectively. Peak I was increased by thymine. It was associated with the reaction  $H^+ + e_{st} = H^*$  (st = stabilized) or  $H + O^- = (OH^-)^*$ , possibly accompanied by  $H + H = H_2$ . The process  $H^+ + e \dots O^- \rightarrow H + O^- \rightarrow (OH^-)^* \rightarrow HO^- + hv$  could be assumed, in which thymine and glucose acted as activator

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USSR

SULTANKHODZHAYEVA, M. N., and SHARPATYY, V. A., Doklady Akademii Nauk SSSR, Vol 200, No 5, 1971, pp 1152-1155

and deactivator, respectively. Peak II could be ascribed to recombination of electrons with  $K^+$ . It was reduced by glucose. A peak at 130-40°K, which developed in the emission of samples that had been bleached or irradiated with intense gamma-rays, was presumably due to recombination of  $K^+$  with electrons formed from  $e_2^-$ .

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1/2 016  
UNCLASSIFIED  
TITLE--LOW TEMPERATURE RADIOLYSIS OF AQUEOUS SOLUTIONS OF DEOXYRIBONUCLEIC  
ACID -U-  
AUTHOR--(04)-SHARPATYY, V.A., PRISTOPA, A.I., PRUKHIDKO, I.N.,  
SULTANKHOZHAYEVA, M.A.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR. SER. KHIM. 1970, (3), 702-5  
DATE PUBLISHED-----7C  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--DNA, AQUEOUS SOLUTION, RADIOLYSIS, LOW TEMPERATURE EFFECT, EPR  
SPECTRUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY ROLL/FRAME--3004/0479 STEP NO--UR/0002/70/000/003/0702/0705  
CIRC ACCESSION NO--AP0131116  
UNCLASSIFIED

272 C16  
CIRC ACCESSION NO--AP0131116  
ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. FROM EPR SPECTRA IT WAS SHOWN THAT  
RADIOLYSIS OF AQ. SOLNS. CONTG. DNA UNDER ALK. AND ACIDIC CONDITIONS  
RESULTS IN PRODUCTS THAT TAKE PART IN DECOMP. OF DNA; ALSO IDENTIFIED  
WERE THE RADICALS OF A BIOPOLYMER THAT IS FORMED IN SUCH REACTIONS. AT  
77DEGREEK DNA WAS SHOWN TO REACT WITH THE REDUCING COMPONENT OF THE  
WATER RADIOLYSIS MOIETY. THE RADIOCHEM. YIELDS OF RADICALS FROM AQ.  
SOLNS. OF DNA AND GLUCOSE WERE TABULATED, OVER A RANGE OF CONCNS. IT  
WAS SHOWN THAT THE REDUCING COMPONENT OF RADIOLYSIS (AQ. ELECTRONS)  
BEHAVES) DIFFERENTLY IN RESPECT TO DNA OR GLUCOSE IN THE SOLN. THE  
LATER TENDS TO STABILIZE THE ELECTRON IN THE MATRIX AND IN ITS  
REACTIONS, WHILE THE H ATOMS ALONG WITH ADDN. TO DOUBLE BONDS IN THE  
THYMINE BASE MAY ALSO REACT AT 77DEGREEK WITH THE SUGAR FRAGMENT OF DNA  
IN A REACTION OF THE TYPE: RH PLUS H YIELDS R PLUS H SUB2; I.E. SIMILAR  
TO REACTION OF HO RADICAL AND CARBOHYDRATE MOL. IN FROZEN, AQ. SOLN. AT  
HIGHER TEMPS. THAN 77DEGREEK. FACILITY: INST. KHIM. FIZ.,  
MOSCOW, USSR.

UNCLASSIFIED

1/2 021  
TITLE--TESTING A MODIFIED ALUMINA COBALT CHROMIA CATALYST IN HYDROCRACKING  
-U-  
AUTHOR--(03)-ABIDOVA, M.F., SULTANOV, A.S., MIRDZHURAYEV, R.  
COUNTRY OF INFO--USSR  
SOURCE--UZB. KHIM. ZH. 1970, 14(1), 26-8  
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS, PROPULSION AND FUELS  
TOPIC TAGS--CATALYTIC CRACKING, METAL CATALYST, CALCIUM, ALUMINUM, COBALT,  
CHROMIUM, DIESEL FUEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FKAME--3001/2222

STEP NO--UR/0291/70/014/001/0026/0028

CIRC ACCESSION NO--AP0127584

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0127584

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTRODUCING CA INTO AN AL CO CR CATALYST MAKES IT POSSIBLE TO PERFORM 1ST STAGE HYDROCRACKING OF VACUUM GAS OIL UNDER RELATIVELY MILD CONDITIONS, WITH HIGH SELECTIVITY FOR THE DIESEL FUEL FRACTION.

UNCLASSIFIED

USSR:

BABAYEVA, A. Kh.; SULTANOV, F. F.; SEREBRYAKOV, Ye. P.;  
TODRIS, I. I.; STEFANOVSKAYA, N. V.; YELDASHEV, A. Ye.

Ashkhabad, Voprosy fiziologicheskikh mekhanizmov adaptatsii  
organizma k zharkomu klimatu, (Aspects of the Physiological  
Mechanisms of Adaptation of the Organism to a Warm Climate),  
"Ylym," 1970, 172 pp

Translation:

<u>Table of Contents</u>	<u>Page</u>
Introduction	5
Some Questions of water-salt balance	18
The function of the kidneys in reaction to high temperature	60
Oxidative phosphorylation and the role of kidney mitochondria in the regulation of glycolysis	81
Adaptive reactions of the adrenal cortex glands in hot climates	104

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USSR

BABAYEVA, A. Kh., et al, Voprosy fiziologicheskikh mekhanizmov adaptatsii organizma k zharkomu klimatu, "Ilym," 1970, 172 pp

The content of free amino acids in the blood plasma  
of humans and animals in the hot climate of  
the Turkmen SSR

136

Compensatory-adaptive reactions during the con-  
striction of the aorta in a hot climate

145

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UDC 613-003.96:613.166+615.75.6:614.779

USSR

SULTANOV, F. F., SADIKOV, G. N., and KARLYYEV, K. M., Institute of Physiology and Experimental Pathology in the Arid Zone, Academy of Sciences Turkmen SSR

"Heat Adaptation and Nucleic Acid and Protein Synthesis in Animal Organs"  
Report II. The effect of multiple exposure to high external temperature  
on RNA and protein synthesis in the organs of white rats.

Ashgabat, Izvestiya Akademii Nauk Turkmenskoy SSR: Seriya Biologicheskikh  
Nauk, No 4, 1971, pp 3-7

Abstract: To study adaptation to heat, the rate of RNA and protein synthesis was determined in the liver, kidneys, heart, and brain of white rats divided into three groups: Trained rats were kept each day for 6 hours in a thermo-chamber where the initial temperature of 26°C was increased by 1° each day for 10 days and then maintained at 36-37°C for the next 20 days. Untrained rats were exposed to a temperature of 36-37°C during one 6-hour session only. Control rats were kept at room temperature. The animals were decapitated on the 10th, 20th, and 30th days; protein synthesis was determined by the  $^{35}\text{S}$  method, and RNA synthesis by the  $\text{P}^{32}$  method. The results revealed that the rate of protein and RNA synthesis in myocardium and brain tissue was essentially the same in all three groups on all three days. After 10 days



USSR

SULTANOV, F. F., et al., Izvestiya Akademii Nauk Turkmenskoy SSR: Seriya Biologicheskikh Nauk, No 4, 1971, pp 3-7

of training, protein and RNA synthesis in liver and kidney tissues in trained rats was reduced by approximately the same degree as in untrained rats, that is, 12-24% below the control level. On the 20th and 30th days of training, these parameters returned to the control level. It is concluded that heart and brain tissues are immune to hyperthermia as far as protein and RNA synthesis is concerned, while liver and kidney tissues can adapt to heat through repeated training.

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UDC 591.461.2:612.014.43

USSR

SULTANOV, F. F., BABAYEVA, A. Kh., and KARIMOVA, R. I., Institute of  
Physiology and Experimental Pathology of Arid Zones, Academy of Sciences  
Turkmen SSR

"Energy Metabolism in the Kidneys of Albino Rats Exposed to Extreme Heat"

Ashkhabad, Izvestiya Akademii Nauk Turkmenskoy SSR, Seriya Biologicheskikh  
Nauk, No 5, 1970, pp 52-56

Abstract: Albino rats were kept in an overheated chamber (45°C) and the  
changes in their kidney function studied. Aerobic glycolysis in solutions  
of the cortical and medullary layers from the kidneys was accelerated. The  
oxidative phosphorylation coefficient P/O in the mitochondria decreased;  
this may result in a reduction of ATP production. Likewise, the amount of  
mitochondrial protein in the kidneys per gram of raw tissue weight decreased.

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USSR

UDC: 51:330.115

SULTANOV, F. Yu., MADZHIDOV, A. V.

"Transportation Network and City Planning"

V sb. Vopr. kibernetiki (Problems of Cybernetics--collection of works),  
vyp. 41, Tashkent, 1970, pp 9-22 (from RZh-Kibernetika, No 7, Jul 71,  
Abstract No 7V670)

[No abstract]

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MEDICINE

SULTANOV, I. V.

5493

01 OCT 1971

UDC 615.471:615.835.3

PRESENT STATE AND FUTURE DEVELOPMENT OF HYPERBARIC OXYGENATION

[Article by I. V. Sultanov and V. P. Brudin of the All-Union Scientific Research Institute of Surgical Equipment and Instruments of the Ministry of Public Health USSR, Moscow; Moscow, Meditsinskaya Tekhnika, Russian, No 3, 1971, pp 46-50]

In connection with the expanding use of therapy by oxygen under increased pressure and of pressure chambers of different types for various pathological conditions, an independent technical trend has been generated in the manufacture of medical instruments, producing numerous problems related to the development and equipment of therapeutic pressure chambers. The initial period of enthusiastic over this method and of overevaluation of its possibilities is now over, and the range of indications for the use of therapeutic pressure chambers has to a considerable degree been established. Enough experience in developing engineering techniques for this purpose has been accumulated in the world for it to become especially important to evaluate critically the haphazard way in which types of pressure chambers and their equipment have so far been classified. It is also important to determine certain directions for the development of technical procedures for hyperbaric oxygenation. In the end result, successful development of this effective and far from exhausted field of medical technology will depend on how it is evaluated and how its possibilities are determined and that, furthermore, will prevent uncontrolled development of very costly apparatuses that might perhaps be unsafe for patients or medical personnel.

The following classification of these facilities may be suggested: 1. one-person pressure chambers; 2. basic oxygenation centers in which the chamber can accommodate a patient and a medical group of various specialists; 3. two-person pressure chamber which can accommodate patient and medical workers; 4. pressure chambers for experimental purposes only.

1/2 075 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--STUDY OF THE FAILURE OF TRANSPARENT POLYMERIC MATERIALS (BLOCKS)  
UNDER THE ACTION OF LASER BEAMS IN THE FREE GENERATION MODE -U-  
AUTHOR-(03)-SULTANOV, M.A., NARZULLAYEV, B.N., URUNOV, V.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK TADZHIKSKOI SSR, DOKLADY, VOL. 13, NO. 3, 1970, P.  
12-16  
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--MATERIAL FAILURE, POLYMETHYLMETHACRYLATE, QUARTZ, POLYSTYRENE  
RESIN, GLASS, NEODYMIUM GLASS, LASER BEAM, SHOCK WAVE, EXPLOSION EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1997/1106

STEP NO--UR/0425/70/013/003/0012/0016

CIRC ACCESSION NO--AT0119964

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0119964

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE MECHANISM OF FAILURE OF TRANSPARENT POLYMERIC MATERIALS (POLYMETHYL METHACRYLATE, QUARTZ, GLASS, AND POLYSTYRENE) UNDER THE ACTION OF NEODYMIUM GLASS LASER RADIATION IN THE FREE GENERATION MODE. THE CHANGES IN THE NATURE OF THE FAILURE PROCESS IN THESE MATERIALS ARE DETERMINED AS A FUNCTION OF THE FOCAL LENGTH OF THE LENSES, THE OUTPUT POWER, AND THE SPOT WHERE THE LASER BEAM IS FOCUSED IN THE MATERIAL. A GENERAL PICTURE IS GIVEN OF THE FAILURE OF POLYMETHYL METHACRYLATE AND POLYSTYRENE UNDER THE ACTION OF LASER BEAMS IN THE FREE GENERATION MODE. IT IS SHOWN THAT THE PASSAGE OF A LASER BEAM THROUGH ONE OF THESE MATERIALS CAUSES THE MATERIAL TO HEAT UP RAPIDLY AT THE FOCUSING POINT AND TO PASS INTO THE LIQUID STATE, THUS FORMING A PLASMA WHICH EXPANDS AT A LARGE VELOCITY. THIS PHENOMENON LEADS TO A POINT, INSTANTANEOUS, AND HIGH POWER EXPLOSION ACCOMPANIED BY THE FORMATION OF A SHOCK WAVE WHICH PROPAGATES AT A HYPERSONIC VELOCITY. FACILITY: TADZHIKSKII GOSUDARSTVENNYI UNIVERSITET, DYUSHAMBE, TADZHIK SSR.

NOT RECORDED

USSR

UDC: None

SULTANOV, M. B.

"Absorption of Ultrasonics in Semimetals"

Leningrad, Fizika Tverdogo Tela, No 7, 1973, pp 2236-2238

Abstract: This paper depends, in part, on an earlier article in which the author named above collaborated (I. A. Gilinskiy, et al, FTT, 14, 1972, p 1905). In the earlier article a theory of ultrasonic absorption in semimetals in a magnetic field was developed, and it was shown that the nature of the absorption differs from absorption in metals with a single-bond Fermi surface. The purpose of the present paper is to examine the absorption of ultrasonic waves by a semimetal in a magnetic field where geometrical oscillations are observed. The analysis begins with an equation based on the assumption that the Fermi surface of electrons and holes is ellipsoidal. By then using general formulas obtained in the earlier article for the currents, the author finds an expression for the absorption coefficient of the longitudinal ultrasonic wave. The geometrical oscillations are found to be the same as in ordinary metals except that their amplitude may be primarily a function of the semimetal's parameters. Also examined is the intermediate field region, where one of the Larmor radii is less than the wavelength whereas the other is greater. The author thanks I. A. Gilinskiy for discussing the results of the paper.

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USSR.  
GILINSKIY, I. A. and SULTANOV, M. B.

UDC: None

"Ultrasonic Absorption in Semimetals"

Leningrad, Fizika Tverdogo Tela, vol 14, No 7, 1972, pp 1905-1914

Abstract: Finding that the phenomenological theory of the absorption of ultrasonics in semimetals does not take into account the effect of electrical eddy fields and that the theory is therefore limited, the authors advance a more consistent theory to replace it. A qualitative explanation is given for the effect of quasi-neutral density oscillations on ultrasonic absorption, and it is noted that in semimetals, as distinct from metals with a single-band Fermi surface, the tensor of deformation potential is practically independent of the impulse. Kinetic equations obtained through consideration of the double-zone model of the semimetal are solved in terms of the local balanced Fermi function, and an expression is found for the absorption coefficient as a function of the magnetic field in which the semimetal is placed. Curves are plotted for that part of the absorption connected with electronic pressure as a function of the frequency of the ultrasonic oscillations, the magnetic field intensity, and the various relationships among the characteristic parameters. The authors

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USSR

UDC: None

GILINSKIY, I. A., Fizika Tverdogo Tela, vol 14, No 7, 1972, pp  
1905-1914

thank R. G. Mints, E. G. Batyev, V. Ya. Kravchenko, V. L. Pokrov-  
skiy, and E. I. Rashbe for their comments.

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USSR

UDC 621.43.063.66.094.37

OSMANOV, M. O., SULTANOV, M. YU. and BELEN'KIY, M. S., Azerbaydzhan Institute of Petroleum and Chemistry imeni M. Azizbekov

"Effectiveness of the Use of Platinum, Palladium, and Copper-Chrome-Oxide Catalysts to Render Engine Exhaust Gases Harmless"

Moscow, Avtomobil'naya Promyshlennost', No 3, 1973, pp 13-14

Abstract: Experiments conducted on SHPK-2 platinum SHPK-0.5 palladium and AzIMYEFTEKHIM-670 copper-chrome-oxide catalysts for rendering engine gases harmless, developed in the USSR showed the following. Under conditions of a tenfold or greater oxygen excess Pt and Pd were highly effective, while a twofold to fivefold oxygen excess resulted in all three being highly effective. When the ratio of CO, H<sub>2</sub> and O<sub>2</sub> is approximately stiochiometric the copper-chrome-oxide was much more effective than the others, while if the O<sub>2</sub> concentration is lower than stiochiometric, only copper-chrome-oxide showed any effectiveness. After 10 hours of function using ethylated benzene Pt and Pd lost significant effectiveness, while the copper-chrome-oxide did not lose effectiveness after 50 hours.

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1/2 038 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--THE IMPORTANCE OF THE LACHRYMONASAL COLOR TEST IN EVALUATING THE  
FUNCTION OF THE LACHRYMAL DUCTS -U-  
AUTHOR--SULTANOV, M.YU. S

COUNTRY OF INFO--USSR

SOURCE--VOYENNO-MEDITSINSKIY ZHURNAL, NO 3, 1970, PP 36-38

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TEST, DIAGNOSTIC METHODS, MILITARY MEDICINE, MEDICAL  
EXAMINATION, VISION, PERSONNEL SELECTION, COLOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/0389

STEP NO--UR/0177/70/000/003/0036/0038

CIRC ACCESSION NO--AP0134163

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134163

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DATA OF THE LACHRYMONASAL COLOR TEST ARE THE MAIN OBJECTIVE CRITERION CHARACTERIZING THE FUNCTIONAL STATE OF THE LACHRYMAL DUCTS. THE INDICATORS OF THAT TEST ARE USED FOR DIAGNOSTIC PURPOSES AND EVALUATION OF THE RESULTS OF TREATMENT. THEIR DETERMINATION IN SELECTEES AND MEMBERS OF THE ARMED FORCES IS ACQUIRING GREAT IMPORTANCE IN MILITARY MEDICAL EXPERTISE. HOWEVER, THERE ARE DIFFERENCES OF OPINION IN THE EVALUATION OF THE LACHRYMONASAL COLOR TEST AND THE CORRESPONDING PROCEDURES PROPOSED BY VARIOUS AUTHORS SHARPLY DIFFER. AS OUR OBSERVATIONS SHOWED, THE MOST CONVENIENT METHOD FOR PRACTICAL PURPOSES IS THE SCALE OF ESTIMATES OF THE INDICATORS OF THE LACHRYMONASAL COLOR TEST PROPOSED BY B. L. POLYAK AND THAT RECOMMENDED BY THE EXISTING TIMETABLE OF THE DISEASE.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--DACRYOCYSTORHINOSTOMY WITH TEMPORARY INTUBATION OF THE ANASTOMOSIS  
AND A MUCOSA LOCK AS AN INSERT -U-  
AUTHOR--SULTANOV, M.YU.  
COUNTRY OF INFO--USSR  
SOURCE--VESTNIK OFTAL'MOLOGII, 1970, NR 3, PP 49-52  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PLASTIC SURGERY, PROSTHESIS, TEFLOW, SILICONE RUBBER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/1936 STEP NO--UR/0357/70/000/003/0049/0052  
CIRC ACCESSION NO--AP0127337  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127337

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INSERTS WERE MADE OF TEPHLON OF SILICON RUBBER, BEING GIVEN THE SHAPE OF SEMI RINGS WITH CONCAVE OUTER SURFACE. THE SEMI RING ENDS WERE SEWN WITH A SILK THREAD FORMING A LOOP. MUCOSA LOCKS IN THE SHAPE OF INSERTS WERE INTRODUCED INTO THE FORMED ANASTOMOSIS, WHICH HELD FAST THE FLAPS OF THE NASAL MUCOSA IN A POSITION SUITABLE FOR THE "TAKE". BY PULLING THE ENDS ON THE THREAD DRAWN PRELIMINARILY THROUGH THE NASAL PASSAGE ONE CAN REDUCE THE DIAMETER OF THE INSERT AND REMOVE IT EASILY IN THE POSTOPERATIVE PERIOD (IN 7-10 DAYS). A TOTAL OF 39 OPERATIONS WERE PERFORMED BY FOLLOWING THIS TECHNIQUE: 33, IN DACRYOCYSTITES AND 6 IN STENOSES OF THE LACRIMO NASAL CANAL. THE PROPOSED METHOD OF DACRYOCYSTORHINOSTOMY WITH TEMPORARY INTUBATION OF THE PLASTIC ANASTOMOSIS (WITHOUT SUTURES) IS EASY TO PERFORM AND THE RESULTS OBTAINED TESTIFIED TO ITS HIGH EFFICACY.

FACILITY: KAFEDRA OFTALMOLOGII VOYENNO-MEDITSINSKOY AKADEMII IM S. M. KIROVA, LENINGRAD.

UNCLASSIFIED

Acc. Nr: AP0049056

Ref. Code: 0357

PRIMARY SOURCE: Vestnik Oftal'mologii, 1970, Nr / ,  
pp 86-88

CONTRAST ROENTGENOGRAPHY OF PATENT LACRIMAL PASSAGES

M. Yu. Sultanov

Summary

Clinical and roentgenographic examination of lacrimal passages in patients made following successful operations of dacryocystorhinostomy after Taumy showed that the frequency of finding restored lacrimal sac and of a large postoperative anastomosis was

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directly proportional to the consistency of the contrast medium employed. Thus, with a 30% iodolipol solution the lacrimal sac was demonstrable in 4 out of 18 persons and large anastomosis (2—4 mm) in one (in the remaining 17 it was filiform). By using bismuth nitrate in a 30% iodolipol solution in a ratio of 1:1 the lacrimal sac was made visible in 9 of 18, large anastomosis—in 8 and filiform one—in 10 patients examined. With the said suspension employed in a ratio of 2:1 the lacrimal sac came into sight in 15 out of 18, large anastomosis—in 14 and filiform one—in 4 subjects. In the lastly named group of the examined (in whom 2:1 suspension was used) the roentgenograms turned out to be more hard, the ostensible lacrimal sacs and anastomoses appearing in greater dimensions. Hence, the use of liquid contrast media in roentgenography of patent lacrimal canaliculus is inexpedient, for they fail to disclose its veritable anatomic state. Better results can be obtained by using the aforementioned suspension in proportion of 2:1.

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19800843

tdh



UDC 620.183:677.4

USSR

TUYCHIYEV, Sh., ~~SULTANOV, N.~~ GINZBURG, B. M., and FRENKEL', S. Ya., Institute of High-Molecular Compounds, Academy of Sciences of the USSR

"Effect Which Drawing has on the Supermolecular Structure of Polymer Fibers"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol 12, Series A, No 9, Sep 70, pp 2,025-2,035

Abstract: Wide-angle and narrow-angle x-ray diffraction methods are used to study polyvinyl alcohol fibers with various degrees of hot drawing. X-ray studies were also done on iodine-contrasted specimens. It is shown that for a simple two-phase model of the supermolecular structure of oriented fibers, the size of amorphous sections increases with the degree of hot-drawing, reaching 86-92% of the crystallite density for "dry" polyvinyl alcohol fibers. As the degree of drawing increases, there is a slight reduction in the crystallite density (by approximately 1%), and the lattice type goes from monoclinic toward orthorhombic. A scheme is proposed for the rearrangements in the supermolecular structure of polyvinyl alcohol fibers with an increase in the degree of hot-drawing. According to this scheme, as the degree of hot-drawing increases there is a rise in the number of continuous chains and a reduction in 1/2

USSR

TUYCHIEV, Sh., et al, Vysokomolekulyarnyye Soyedineniya, Vol 12, Series A, No 9, Sep 70, pp 2,025-2,035

the number of folded chains. At the same time, there is somewhat of a reduction in the transverse dimensions of fibrils due to a reduction in the number of blocks in the "mosaic" in the fibril crystallites, accompanied by an increase of shear fractures in the fibril packing. Drawing increases the density of both intrafibrillar and interfibrillar amorphous layers. On the whole, the structure of the fibers becomes more uniform. The authors thank D. Ya. TSVANKIN, A. I. SLUTSKER, Yu. V. BRSTKIN and S. L. DOBRETsov for discussing the results and for useful criticism, and also A. G. POVESHCHENKO for constant interest in the work.

2/2

- 76 -

USSR

UDC: 621.315.52

AZIMOV, S. A., SULTANOV, N. A., ISLAMOV, L., and NAGMATOV, R. N.

"Infrared Quenching of the Photoconductivity of Silicon With a Nickel Impurity"

Leningrad, Fizika i Tekhnika Poluprovodnikov, No 9, September 1973, pp 1837-1839

Abstract: The purpose of this paper is to supplement the data already gathered concerning Ni energy levels in silicon by measuring the long-wave limits of the photoconductivity-quenching spectral distribution. The nickel was diffused in the silicon from a sputtered layer at a temperature of 1200° C in air for 10-30 hours. The initial silicon was n-type monocrystalline with an electron concentration of  $2 \cdot 10^{13}/\text{cm}^3$  to  $8 \cdot 10^{13}/\text{cm}^3$ . After the diffusion, the specimens maintained their n conductivity but their resistivity increased to the order of  $10^2$ - $10^3$  ohms-cm. The spectral distribution measurements were conducted with the SPM-2 monochromator with a LiF prism, using d-c and at 80° K, and a constant white light was used to observe the infrared quenching of the photoconductivity. The spectral distribution curve is presented. A model for the

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USSR

UDC: 621.315.52

AZIMOV, S. A., et al, Fizika i tekhnika poluprovodnikov, No 9,  
September 1973, pp 1837-1839

mechanism of the quenching is proposed, together with an explanatory  
diagram.

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USSR

UDC: 621.315.592

AZIMOV, S. A., YUNUSOV, M. S., TURSUNOV, N. A., and SULTANOV, N. A.  
S. V. Starodubtsev Physicotechnical Institute, Tashkent

"Some Characteristics of Silicon With Palladium Doping"

Leningrad, Fizika i Tekhnika Poluprovodnikov, No 8, 1972, pp 1438-1441

Abstract: The purpose of the experiments described in this paper is to acquire more detailed information concerning the electro-physical characteristics of silicon doped with palladium. Subject specimens were n-type silicon monocrystals with resistivity of 1-2000 ohm.cm and p-type silicon with a resistivity of 10-10,000 ohm.cm, having a dislocation density of  $10^4/\text{cm}^2$  and an oxygen content of  $1-5 \cdot 10^{16}$  atoms/cc. The palladium with which the crystals were doped was 99.998% pure, and the doping was done by diffusion saturation in the interval of 1100-1250° C and in the time intervals of 30 minutes to 20 hours in quartz ampoules in an atmosphere of pure argon. The effect of the palladium on the electrical characteristics of the silicon, the solubility of the palladium in the silicon, and the effect of thermal processing were investigated.

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USSR

UDC: 621.315.592

AZIMOV, S. A., et al, Fizika i tekhnika poluprovodnikov, No 8, 1972, pp 1438-1441

Various characteristics of the doped crystals are plotted. The authors express their thanks to G. Yuldashev for his assistance with the experiments.

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Semiconductors and Transistors

USSR

UDC 621.382.3

LEBEDEV, A.A., MAMADALIMOV, A.T., SULTANOV, N.A.

"General Parameters Of Silicon Diodes With Ni As Impurity"

Fizika i tekhnika poluprovodnikov. Vol 5, No 12, Dec 1971, pp 2277-2280

Abstract: Silicon diodes compensated with nickel, with a section of negative differential resistance (NDR) of S-shape in the direct branch of the voltage-current characteristic are prepared and investigated. The diodes were created by fusing of aluminum and the alloy Au + 0.1 percent Sb at 700° C for one minute. The area of the contacts was on the order of 0.2 mm<sup>2</sup>. Part of the specimens were produced by ordinary technology -- the contacts are located on opposite sides of the Si wafer. The thickness of the base in such diodes  $W \approx 0.15-0.25$  mm. The other specimens were produced by planar technology -- all the contacts are located on one side of the wafer. In these specimens the distance between the contacts (i.e., the thickness of the base) was different -- from 0.1 to 1.5 mm. The thickness of the Si wafer was on the order of 0.4 mm. Such a location of the contacts made it possible to study the distribution of the potential along the base of the diode and the dependence of the "separation" [oryv] voltage  $V_g$  on  $W$ . The section of the NDR was observed at 77--350° K. The "separation" voltage

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USSR

LEBEDEV, A. A., et al., Fizika i tekhnika poluprovodnikov, Vol 5, No 12, Dec 1971, pp 2277-2280

$V_g$  is proportional to the square of the base line. The turn-on time of the diodes is  $\leq 1$  microsec, the turn-off time is  $\sim 1-10$  microsecond and weakly depends on the temperature. The voltage-current characteristic of the diodes depends on the illumination.  $V_g$  is reduced by 50 percent with illumination of  $\sim 400$  lux. Extrinsic photoconductivity with  $h\nu > 0.4$  ev, infrared quenching and negative photoconductivity in specimens with injection at  $0.7 \leq h\nu \leq 1.1$  ev are observed in silicon with nickel at  $77^\circ$  K. In the fundamental absorption region the photoconductivity sublinearly depends on the intensity of the light. Physicotechnical Institute imeni A.F. Ioffe, AS, USSR, Leningrad. Received by editors 9 March 1971. 8 fig. 7 ref.

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USSR

UDC: 621.382.2

LEBEDEV, A. A., MAMADALIMOV, A. T., and SULTANOV, N. A.

"Investigating Diodes with S-Shaped Negative Resistance, Based on Silicon Alloyed with Sulfur"

Leningrad, Fizika i tekhnika poluprovodnikov, Vol 5, No 1, 1971, pp 22-30

Abstract: This article discusses the preparation of an investigation into light-sensitive n-silicon semiconductor diodes, doped with sulfur, which are important in the field of optical electronics. The sulfur forms two donor levels in the upper half of the forbidden zone with activation energies of 0.18 and 0.37 eV. It also has the advantage of high diffusion factor in silicon,  $10^{-8}$  cm<sup>2</sup>/s at 1100° C, and can therefore be easily alloyed by the diffusion method. Experiments for the measurement of the Hall effect, the volt-ampere characteristics, and the spectral dependence of the photoelectric voltage on the photon energy of incident light are described, and the transient characteristics and oscillations of the diode are measured. The results of these experimental measurements are given in curve form.

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1/2 019 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--DIODES WITH S SHAPED VOLT AMPERE (V A) CHARACTERISTICS PREPARED  
FROM COPPER COMPENSATED SILICON -U-  
AUTHOR--(02)--LEBEDEV, A.A., SULTANOV, N.A.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK UZB. SSR. SER. FIZ.-MAT. NAUK 1970, 14(1), 65-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.  
TOPIC TAGS--SILICON DIODE, COPPER COMPOUND, VOLT AMPERE CHARACTERISTIC  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1998/0952 STEP NO--UR/0166/70/014/001/0065/0068  
CIRC ACCESSION NO--AP0121554  
UNCLASSIFIED

2/2 019  
CIRC ACCESSION NO--AP0121554

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LONG DIODES WERE MADE, AND CU DIFFUSION WAS CARRIED OUT AT 1150DEGREESC. RESISTIVITIES OF 10 PRIME4-10 PRIME5 OHM-CM FOR N-SI AND (3-5) TIMES 10 PRIME4 OHM-CM FOR RHO-SI WERE OBTAINED. V-A CHARACTERISTICS WERE TAKEN AT 300 AND 77DEGREESK. ONLY SIMILAR TO 30PERCENT OF THE DIODES EXHIBITED NEG. DIFFERENTIAL RESISTANCE. THE VALUE OF V SUBMAX WAS PLOTTED VS. TEMP. SWITCHING TIME CONSTS. WERE DETD. FROM MEASUREMENTS WITH DELAYED RECTANGULAR PULSES. RECOVERY TIMES WERE 10 NEGATIVE PRIME6-10 NEGATIVE PRIME7 SEC.

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Acc. Nr:

170049510

Abstracting Service:

CHEMICAL ABST. 5-70

Ref. Code:

48 0039

100805w Addition of chlorodimethyl ether to trialkylalkunylsilanes. Shikhmamedbekova, A. Z.; Sultanov, R. A. (Arerb. Gos. Univ. im. Kirova, Baku, USSR). *Zh. Obshch. Khim.* 1970, 40(1), 77-84 (Russ). Heating 41 g  $\text{ClCH}_2\text{OMe}$  with 50 g  $\text{Me}_3\text{Si-CH}_2\text{CH}_2$  and 2 g  $\text{ZnCl}_2$  in an autoclave 48 hr at  $150^\circ$  gave  $\text{MeOCH}_2\text{CH}_2\text{CH}_2$ , b.  $46-7^\circ$ , and  $(\text{Me}_2\text{Si})_2\text{O}$ . Similar reaction with  $\text{Et}_3\text{SiCH}_2\text{CH}_2\text{CH}_2$  in  $\text{Et}_2\text{O}$  3 hr at room temp. gave  $\text{MeO-(CH}_2)_3\text{CH}_2\text{CH}_2$  (I), b.  $70-70.5^\circ$ , and  $(\text{Et}_2\text{Si})_2\text{O}$ ; when this reaction was run with  $\text{Bz}_2\text{O}_2$  catalyst, the same products were formed. I hydrogenated over Pd to  $\text{BuOMe}$ . Heating 64 g  $\text{Me}_3\text{Si-(CH}_2)_3\text{CH}_2\text{CH}_2$  with 41 g  $\text{ClCH}_2\text{OMe}$  and 2 g  $\text{ZnCl}_2$  24 hr at  $125^\circ$  gave 29%  $\text{Me}_3\text{Si-(CH}_2)_3\text{CHCl-(CH}_2)_3\text{OMe}$  (II) b.  $60-1^\circ$ ,  $d^{20}_4$  1.005,  $n^{20}_D$  1.4720, which with alc. KOH 10 hr at  $170-80^\circ$  gave 68%  $\text{Me}_3\text{Si-(CH}_2)_3\text{CH:CHCH}_2\text{OMe}$ , b.  $48-9^\circ$ , 0.827, 1.4300. Simi-

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larly, but with  $Bz_2O_2$  catalyst, was prepd. 22%  $Me_3Si(CH_2)_3CH-(CH_2OMe)CH_2Cl$ ,  $b_p$  87-8°, 1.018, 1.4763, which with KOH as above gave  $Me_3Si(CH_2)_3C(CH_2OMe):CH_2$ ,  $b_p$  83-4°, 0.8327, 1.4375. II and KOAc-AcOH heated 20 hr at 230° gave 30%  $Me_3Si(CH_2)_3CH(OAc)(CH_2)_3OMe$ ,  $b_p$  106-7°, 1.013, 1.4517; similarly was prepd. 37%  $Me_3Si(CH_2)_3CH(CH_2OMe)CH_2OAc$ ,  $b_p$  115.5-17°, 1.020, 1.4580. These acetates kept 10 days in MeOH- $H_2SO_4$  gave resp. 63%  $Me_3Si(CH_2)_3CH(OH)(CH_2)_3OMe$ ,  $b_p$  100-1°, 0.955, 1.4680; and 67%  $Me_3Si(CH_2)_3CH(CH_2OMe)CH_2OH$ ,  $b_p$  111-12°, 0.963, 1.4700, while treating II with  $MeONa-MeOH$  gave in 20 hr 41%  $Me_3Si(CH_2)_3CH(OMe)(CH_2)_3OMe$ ,  $b_p$  48-8°, 0.913, 1.4409; and 34%  $Me_3Si(CH_2)_3CH(CH_2OMe)CH_2OMe$ ,  $b_p$  56-7°, 0.9255, 1.4425. NMR and ir spectra are reported.

G. M. Kosolapoff

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SULTANOV, T. A.

JPRS - 54173  
01 OCT 71

UDC 615.472:615.835.351:615.462  
ANALYSIS OF STRUCTURAL STRENGTH OF THE SHELL OF A THERAPEUTIC  
PRESSURE CHAMBER BUILT OF ORTHOTROPIC TWO-PLY FIBERGLASS

[Article by I. Ye. Baranik, V.P. Khoroshilov, I.V. Kaminskaya,  
T.A. Sultanov, and V.P. Balabin, <sup>1</sup>the North Donetsk branch of  
the All-Union Scientific Research and Structural Institute of  
Chemical Engineering and All-Union Scientific Institute of  
Institute of Surgical Equipment and Instruments, Moscow;  
Moscow, Meditsinskaya Tekhnika, Russian, No 3, 1971, pp 29-  
31]

Steel is the most widely accepted material used for building shells of various types of pressure chambers. The main disadvantage of steel is its weight, which makes its use in clinical conditions difficult. For technological reasons, the use of titanium is limited so far. Thus, the most promising material is fiberglass, because of its light weight, high strength, technological qualities, and low cost. The strength of a pressure chamber shell can be calculated only when certain investigations are carried out in advance.

The fiberglass shell of a pressure chamber is a thin-walled spun shell of positive curvature. In order to join the shell with other subassemblies, metal stiffening rings are installed at each end of the shell. Under the uniform action of inner force loading, plane stress is generated in the shell wall, with the principal stresses oriented along the annular and meridional directions. To best utilize the anisotropy of the fiberglass, the method of separate layer longitudinal and transverse winding is used in manufacturing the shell. A layer is the entire thickness of the wall formed by the winding in one direction, irrespective of how many times (prokhorov) the glass fiber is turned around the longitudinal and transverse winding does not permit obtaining the optimal thickness in a shell of double curvature, inasmuch as, in contrast to the easily obtainable necessary

USSR

UDC: 612.674

BEREZIN, I. P., SULTANOV, T. A., FIGAREV, V. A., and NABATOV, Yu. A., All Union Scientific Research Institute of Surgical Apparatus and Instruments, and Central Institute for Advanced Training of Physicians, Moscow

"Early Manifestations of the Toxic Effects of Hyperbaric Oxygen"

Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 6, Nov/Dec 70, pp 50-54

Abstract: Four stages were traced in the manifestation of the toxic effects of oxygen (3 atm) inhaled by dogs and cats: (1) slowing of the respiratory and pulse rates; (2) appearance of slow waves on the EEG, acceleration of the respiratory and pulse rates, and autonomic disturbances (pupil contraction or dilatation); (3) maximum increase in slow waves, high-amplitude discharges of acute waves, local hyperkinesia, restlessness, intensification of autonomic disturbances (salivation, pupil contraction and dilatation), and further acceleration of the respiratory and pulse rates; and (4) epileptic convulsions, continuous acute hyper-synchronized discharges on the EEG, and further acceleration and onset of respiratory and pulse dysrhythmias. EEG shifts were observed in all experimental animals, whereas shifts in respiration and pulse rate prior to the convulsive

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USSR

BEREZIN, I. P., et al, Eksperimental'naya Khirurgiya i Anesteziologiya, No 6,  
Nov/Dec 70, pp 50-54

period did not occur invariably. Hence electroencephalography would appear to be the most reliable method of detecting early signs of oxygen intoxication. The safe period for inhaling hyperbaric oxygen (3 atm) while awake was found to be  $133 \pm 4.6$  minutes for cats and  $74 \pm 13.6$  minutes for dogs.



USSR

UDC 621.791.756.011

CHERKASOV, N. N., ABRALOV, M. A., ~~SULTANOV~~, U. T., and KUDINOV, A. V.,  
Tashkent Polytechnical Institute

"Effect of Technological Factors on the Properties of VT-22 Weld Joints Produced by Electroslag Welding"

Tashkent, Izvestiya Akademii Nauk, Uzbek SSR--Seriya Tekhnicheskikh Nauk, No 6, 1972, pp 46-48

Abstract: Plates of titanium alloy VT-22 were welded by the electroslag welding process and heat treated at different temperatures to obtain the highest values of strength and ductility. From this work it was established that at 750 C the best values of impact strength for the seam metal, heat affected zone and base metal. The weld joint, when annealed at 800-850 C, was more ductile than after annealing at 750 C, but due to an inadmissible lowering of strength properties for both the seam and base metal, annealing above 750 C was not recommended.

The optimum welding process for VT-22 plates 30 and 60 mm thick was a welding current of 1200-1500 and 1800-2400 amp respectively at a welding voltage of 24-25 v and an argon consumption of 20-25 liter/min. 1 figure, 2 bibliographic references.

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1/2 024  
TITLE--A METHOD OF HARDENING THE METAL OF A SEAM AS THE JOINT IS BEING  
FORMED -U- UNCLASSIFIED PROCESSING DATE--16OCT70  
AUTHOR-(03)-SULTANOV, U.T., UMAROV, B.V., ABRALOV, M.A.  
COUNTRY OF INFO--USSR  
SOURCE--TASHKENT, IZVESTIYA AKADEMII NAUK UZSSR: SERIYA TEKHNICHESKIKH  
NAUK, NO 1, 1970, PP 60-63  
DATE PUBLISHED-----70  
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS  
TOPIC TAGS--ELECTROSLAG WELDING, WELD JOINT, SEAM WELDING, MECHANICAL  
PROPERTY, GRAIN SIZE, ELECTROMAGNETIC MIXING, METAL HARDENING  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/1177 STEP NO--UR/0167770/000/001/0060/0063  
CIRC ACCESSION NO--AP0118266  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118266

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A PROCEDURE IS PROPOSED FOR IMPROVING THE STRENGTH OF JOINTS DURING THE WELDING PROCESS. THE METHOD IS BASED ON THE PRINCIPLE THAT A FINE GRAINED STRUCTURE WILL SLIGHTLY IMPROVE THE MECHANICAL PROPERTIES OF METAL. TO PRODUCE THIS KIND OF STRUCTURE IN WELDED JOINTS, AN ELECTROSLAG PROCESS IS USED WITH ELECTROMAGNETIC AGITATION OF THE MOLTEN METAL. THE PROCEDURE IS REALIZED ON A SPECIAL MECHANISM IN WHICH AN ELECTROMAGNETIC COIL FOLLOWS THE WELDING ELECTRODE ON THE BACK SIDE OF THE JOINT BEING FORMED. THE FIELD SET UP TO BE THE COIL INTERACTS WITH THE WELDING CURRENT TO PRODUCE INTENSE AGITATION OF THE METAL PARTICLES IN THE MELT. THE LOCATION OF THE CONTROLLING FIELD ON THE OPPOSITE SIDE OF THE SEAM ELIMINATES ANY EFFECT ON THE STABILITY OF THE ARC PROCESS, AND CRYSTALLIZATION TAKES PLACE WITHOUT DIRECT CONTACT BETWEEN CONTROL EQUIPMENT AND THE METAL BATH. A SPECIAL TRANSFORMER FEEDS THE CONTROL COIL TO PRODUCE FIELD PULSES OF ALTERNATING POLARITY AND CONTROLLABLE DURATION. STRUCTURAL ANALYSIS AND MECHANICAL TESTS SHOWED THAT ELECTROMAGNETIC TREATMENT DURING THE WELDING PROCESS PRODUCES A FINE GRAINED STRUCTURE IN THE SEAM METAL AND IMPROVES THE MECHANICAL PROPERTIES OF THE RESULTANT JOINTS.

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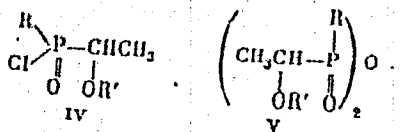
UDC 547.26'118+547.1926

GAZIZOV, M. B., SULTANOVA, D. B., RAZUMOV, A. I., OSTANINA, L. P., and  
GALYAUDINOVA, A. A.

"Interaction of the Dichlorides of Trivalent Phosphorus with Acetic Anhydride  
in the Presence of  $\alpha$ -Chloroethers"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, p 213

Abstract: Dialkylchloro phosphites react with the anhydrides of carboxylic acid (I) with the formation of  $\alpha$ -ketophosphonic esters (M. B. Gazizov, et al., ZhOKh, No 39, 2600, 1969). The compounds (I) and the dichlorides of trivalent phosphorus (II) react slowly with each other at room temperature and more intensely at 50° with the formation of polymer products. However, in the presence of  $\alpha$ -chloroethers (III) at 50° for 10 hours, the compounds (I) and (II) form the corresponding acid chlorides (IV) and anhydrides (V) of  $\alpha$ -alkoxyethyl phosphonic and phosphonous acids.



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USSR

GAZIZOV, M. B., et al., Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973,  
p 213

The yields of the products (IV) and (V) depend strongly on the ratio of the initial compounds (I) and (II). Some physical-chemical properties of the compounds and the schematic for obtaining compound (IV) are presented.

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USSR

UDC 547.26'118 + 547.292.6

GAZIZOV, M. B., SULTANOVA, D. B., RAZUMOV, A. I., OSTANINA, L. P., SHAKIROV, I. Kh., ZYKOVA, T. V., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Reaction of Dialkyl Chlorophosphites With Acetic Acid Acylals"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 12, Dec 72, pp 2634-2638

Abstract: It was shown that alpha-chloroethers formed in the reaction of dialkyl chlorophosphites with acetic acid acylals undergo secondary reactions with dialkyl chlorophosphites forming ester-acid chlorides of  $\alpha$ -alkoxyethylphosphonic acids. It was shown by IR spectroscopy that the ester-acid chlorides of  $\alpha$ -alkoxyethylphosphonic acids exist in two conformations resulting from different orientation of the polar bonds P=O and C-O: conformation A with parallel (cis) or nearly parallel (gauche) orientation of P=O and C-O, and the conformation B with the antiparallel trans orientation of these bonds. Purification methods were proposed for  $\alpha$ -chloroethers and dialkyl chlorophosphites by treatment with catechol chlorophosphite and with acetyl chloride respectively to remove the acetal and trialkyl phosphite impurities.

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USSR

UDC 547.26'118 + 547.292.6

GAZIZOV, M. B., SULTANOVA, D. B., RAZUMOV, A. I., YELNIKOVA, G. N., and  
OSTANINA, L. P., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Reaction of Aryldichlorophosphines With Acetic Acid Acylals"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, pp 2112-2113

Abstract: Aryldichlorophosphines react with equimolar quantities of acetic acid acylals at 50° yielding  $\alpha$ -alkoxyethylarylphosphinic acid chlorides. The yields of these products can be improved by using excess chlorophosphine or running the reaction in presence of an equimolar quantity of  $\alpha$ -chloroether.

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USSR

UDC 547.26'118:547.2926

GAZIZOV, M. B., ~~SULTANOVA, D. B.~~, RAZUMOV, A. I., OSTAPINA, L. P., Kazan'  
Institute of Chemical Technology imeni S. M. Kirov

"Reaction of Alkyl Dichlorophosphites with Acetic Acid Acylals"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, p 1647

Abstract: It was found that carboxylic acid acylals (I) react with alkyl dichlorophosphites (II) to give  $\alpha$ -alkoxyethylphosphonic acid ester chlorides and the corresponding pyrophosphonates. In this reaction the alkyl dichlorophosphites show electrophilic properties.

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USSR

UDC 547.26'118 + 546.185.131

GAZIZOV, M. B., SULTANOVA, D. B., RAZUMOV, A. I., and TREGUBOVA, T. V.,  
Kazan' Chemical Technological Institute imeni S. M. Kirov

"Reaction of Neutral Esters of  $\alpha$ -Alkoxyethylphosphonic Acids With  
Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, p 2087

Abstract: The reaction of neutral esters of  $\alpha$ -alkoxyethylphosphonic acid with  $\text{PCl}_5$ , taking the reagents at the ratio of 1:3, at  $40^\circ$  for 15 hrs, yields  $\alpha$ -alkoxyvinylphosphonic acid chlorides (I) and alkylidichlorophosphates (II), in addition to phosphorus oxychloride, hydrogen chloride and alkyl halides:  $\text{R}'$  or  $\text{R}$ , the yield in %, b.p. $^\circ$ /mm Hg,  $d_4^{20}$ ,  $n_D^{20}$  for (I) for (I) are being reported:  $\text{C}_2\text{H}_5$ , 74.0, 63/0.03, 1.3269, 1.4910;  $\text{C}_4\text{H}_9$ , 66.7, 85/0.07, 1.2334, 1.4870; and for (II):  $\text{C}_2\text{H}_5$ , 17.0, 81/43, 1.3823, 1.4340;  $\text{C}_3\text{H}_7$ , 32.8, 67/10, 1.3082, 1.4380.

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USSR

UDC 547.26'118 + 547.292.6

GAZIZOV, M. B., SULTANOVA, D. B., RAZUMOV, A. I., OSTANINA, L. P., ZYKOVA, T. V., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute  
imeni S. M. Kirov

"Reaction of Trivalent Phosphorus Trichloride With Acetic Anhydride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 10, Oct 73, pp 2160-2165

Abstract: Experimental data are reported of the reaction of alkyl-dichlorophosphites, aryl- and ethyldichlorophosphines (I) with acetic anhydride (II). The same reactions were also studied in presence of  $\alpha$ -chloroesters (III). Reaction products were studied by means of IR and NMR spectroscopy, by chemical methods and thin layer chromatography. On the basis of NMR  $^{31}\text{P}$  it has been shown that in the reaction of (I) with (II) a gradual substitution of chlorine atoms by acetoxy groups takes place in compound (I). A synthetic method has been developed for the chloroanhydrides and anhydrides of  $\alpha$ -alkoxyethylphosphonic and phosphinic acids directly from the derivatives of the phosphorous and phosphinous acids.

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USSR

UDC 547.26'118 + 547.222

GAZIVOV, M. B., SULTANOVA, D. B., RAZUMOV, A. I., OSTANINA, L. P., and  
RUSALKINA, A. M., Kazan' Chemico-Technological Institute imeni S. M. Kirov

"Reaction of Monochlorophosphites with  $\alpha$ -Haloethers"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,575-2,576

Abstract: Dialkylchlorophosphines react with  $\alpha$ -haloethers in a manner analogous to the first stage of the Arbuzov reaction. In this study the authors reacted such halides with equimolar amounts of dialkyl chlorophosphites, obtaining the corresponding  $\alpha$ -alkoxyethylphosphonate ester chlorides. The reaction was analogous to the Arbuzov reaction. The structure of these products was verified from derivative neutral esters, infrared and paramagnetic resonance data, and elemental analysis for phosphorus and chlorine. Physical constants and structural formulas are given.

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USSR

UDC 547.26'118+547.29'26

GAZIZOV, M. B., ~~SULTANOVA, D. B.~~, OSTANINA, L. P., ZYKOVA, T. V.,  
SALAKHUTDINOV, R. A., RAZUMOV, A. I., Kazan' Institute of  
Chemical Technology imeni S. M. Kirov

"Reaction of Monochlorophosphites With Acylals of Acetic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971, pp 2167-  
2171

Abstract: The mechanism of the reactions of aromatic chloro-phosphites with  $\alpha$ -alkoxyalkyl acetates was studied by physico-chemical analysis of the high-boiling fraction of the reaction products. Heating o-phenylene- or o-benzoylene chlorophosphites with  $\alpha$ -ethoxyethyl acetate at 50° gave  $\alpha$ -ethoxyethylphosphonates which were identified by their IR, ESR, and NMR spectra. Analogous reactions of the cited cyclic chlorophosphites with  $\alpha$ -chloroethyl ether or diethyl acetal gave the same products with a phosphonate structure. Thus, the cited reactions proceed by a stepwise mechanism leading to formation of phosphonate and not a phosphite structure. The reaction mechanism involving an intercyclc  
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USSR

GAZIZOV, M. B., et al, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971, pp 2167-2171

electron transfer is outlined. Analysis of the ESR spectrum of one of the products, 2-( $\alpha$ -ethoxyethyl)-2,4-dioxobenzo-1,3,2-dioxaphosphorene, revealed the existence of two stable conformational isomers of the compound, which differ in orientation of methyl protons in relation to the benzene ring and the oxygen of the carbonyl. The ESR spectra of the two compounds are shown and their physical constants are tabulated.

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USSR:

UDC 547.26'118+547.292'26

GAZIZOV, M. B., SULTANOVA, D. B., MOSKVA, V. V., MAYKOVA, A. I., and  
RAZUMOV, A. I.

"Reaction of Diethyl Chlorophosphite With Carboxylic Acid Acylals"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 4, Apr 71, pp 932-933

Abstract: Acetic acid acylals react easily with diethyl chlorophosphite yielding a mixture of products consisting of ethyl acetophosphonate, ethyl  $\alpha$ -alkoxyethylphosphonate, an  $\alpha$ -chloroether, and acetyl chloride.

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USSR

UDC 519.217

SIRAZHDINOV, S. Kh., AZLAROV, T. A., SULTANOVA, D. Kh.

"Asymptotic Study of Certain Queueing Systems"

Bol'shiye Sistemy Massovoye Obsluzh. Nadezhnost' [Large Systems. Queueing. Reliability -- Collection of Works], Moscow, Nauka Press, 1970, pp 351-358 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V41 by O. Viskov).

Translation: A homogeneous Poisson flow of requests is serviced by  $n$  independently functioning identical devices. The duration of servicing is assumed to be exponentially distributed. The devices are subject to random failures. The mean time between failures of each device and the repair time are considered to be independently exponentially distributed random quantities with mean  $\theta_1^{-1}$  and  $\theta_2^{-1}$  respectively. After each servicing event, the device is given a preventative maintenance inspection, requiring a random time with exponential distribution and mean  $\theta_3^{-1}$ . Upon completion of inspection, the device is sent to repair with probability  $p$  or returned to service with probability  $1-p$ . It is assumed that the requests which find no free operating devices upon entering the system are refused and are considered lost. Requests, the servicing of which is interrupted due to a defective device, are also considered lost. Let  $P_{ijk}$  be the probability that  $i$  devices are involved in servicing, while  $j$  and  $k$  devices are in repair and

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UDC 519.217

SIRAZHDINOV, S. Kh., AZLAROV, T. A., SULTANOVA, D. Kh., Bol'shiye Sistemy Mass-ovoye Obsluzh. Nadezhnost' Moscow, Nauka Press, 1970, pp 351-358

inspection respectively. The asymptotic behavior of these probabilities is studied as 1)  $\theta_2 \rightarrow \infty$ ,  $\theta_3 \rightarrow \infty$ , and 2)  $\theta_1 \rightarrow 0$ ,  $p \rightarrow 0$ ,  $\theta_3 \rightarrow \infty$ .

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USSR

UDC 678.742.3.01:53

MAMEDOV, R. I., SADYKH-ZADE, S. I., SULTANOV, R. A., ALIYEV, G. D.  
ALI-ZADE, E. M., and FATALIYEV, A. G.

"Modification of Polypropylene With Organsphosphorus Compounds During the Reprocessing"

Moscow, Plasticheskiye Massy, No 6, 1973, pp 61-62

Abstract: Results of the investigation of thermal and optical ageing of a polypropylene sample modified by a diphosphite are described. It was established that addition of the diphosphite to the polypropylene retards the oxidation processes, this material exhibiting better indexes than polypropylene samples modified with synergistic mixtures of 0.3% of topanol KA + 0.5% of dilauryl thiodipropionate and the light stabilizer benzene OA. Addition of the diphosphite to the polypropylene increases considerably its elasticity preserving its starting strength and increasing its frost stability down to  $-30^{\circ}\text{C}$ .

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USSR

UDC 547.3413

NURTDINOV, S. KH., ISMAGILOVA, N. M., NAZAROV, V. S., ZYKOVA, T. V.,  
SALAKHUTDINOV, R. A., SULTANOVA, R. B., and TSIVUNIN, V. S., Kazan' Chemical-  
Technological Institute Imeni S. M. Kirov

"Reaction of Aryl- and Diarylchlorophosphites With Cyclic Ketones"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 6, Jun 73, pp 1251-1254

Abstract: Phenyl- and diphenylchlorophosphites react with equimolar quantities of cyclohexanone and cyclopentanone upon heating to 130-150° for 17-20 hrs in a closed system, yielding the respective esters of cyclohexen-1-yl(cyclopenten-1-yl)phosphonic acids. The diphenyl ester of cyclohexen-1-ylphosphonic acid (I) reacts with phosphorus pentasulfide converting to the thiophosphonic acid derivative. Bromine adds across the double bond of (I) producing a dibromide which can be dehydrobrominated to diphenyl ester of 2,6-cyclohexadiene-1-ylphosphonic acid.

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USSR

UDC 547.242

MIFTAKHOVA, R. G., AKHMETOVA, F. V., and SULTANOVA, R. KH., Kazan' Chemical-  
Technological Institute Imeni S. M. Kirov

"Synthesis of Ketoxime Alkyl- and Arylarsinous Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, pp 1966-1969

Abstract: Reaction of various ketoximes with alkyl- and arylarsineoximes or  
with alkyl- and arylhaloarsines in presence of triethylamine yields ketoxime  
esters of trivalent arsenic acids. The products are colorless liquids with  
characteristic odors; they are easily hydrolyzed by atmospheric moisture.

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USSR

UDC 621.373.826:621.396

ZARKEVICH, YE. A., MAKEYEV, O. N., ~~SULTAN-ZADE, T. S.~~

"Results of Experimental Operation of a Photoreceiver for Open Communications Lines"

V sb. Ispol'z. optich. kvant. generatorov v sovrem. tekhn. i med. Ch. 2-3  
(Utilization of Lasers in Modern Engineering and Medicine. Parts 2-3 collection of works), Leningrad, 1971, pp 38-43 (from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D652)

Translation: A photoreceiver is described. It is noted that the service life of the receiver significantly exceeds 500 years and is on the average  $> 1,000$  hours. The basic cause for the drop in sensitivity is a decrease in the quantum efficiency of the photocathode which "fatigues." The peak of the spectral characteristic can be shifted to the shorter wave range. The current amplification coefficient of the dynode system does not change in practice. The total effect of the inductions for Moscow is 3-6 decibels. The amplification coefficient of the dynode system is incompletely used. It is limited by the limiting allowable value of the anode current of the photomultiplier (100 microamps). The application of a linear optico-mechanical automatic level control circuit is not justified. On the whole, during the operating process the photoreceiver

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ZARKEVICH, YE. A., et al., Ispol'z. optich. kvant. generatorov v sovren. tekhn. i med. Ch. 2-3, Leningrad, 1971, pp 38-43

has recommended itself as one of the most reliable units of the linear channel of the optical communications line. There are 3 illustrations, 1 table and a 1-entry bibliography.

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USSR

Recorders and Transducers

UDC 621.382.621.385.65

KORZINKIN, V.A., SULTAN-ZADE, T.S.

"Approximate Theory Of One Scheme For A Light-Microwave Transducer"

Tr. Mosk. elektrotekhn. in-ta svyazi (Works Of The Moscow Electrical Engineering Institute Of Communications), 1970, No [omitted], pp 15-18 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B196)

Translation: An approximate theory is considered for a photodetector which provides a semiconductor analog of a traveling-wave tube, with a photocathode and consisting of a semiconductor close to which a retarding system is located. A voltage is applied to the semiconductor collinearly with which light modulated for some frequency falls on the input of the device. A signal of this frequency is removed from the output of the retarding system. An approximate solution of equations obtained for n-type Si with an impurity concentration of  $10^{12} \text{ cm}^{-3}$  made it possible to estimate a gain of  $\sim 6000 \text{ db}$  on a 1-cm length of the retarding system. 4 ref. N.S.

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USSR

UDC 621.38:621.2

NOVIKOV, A. V., BIRULIN, A. I., SUL'ZHENKO, YU. F., and KORSHOV, V. I.

"Systems of Photoelectric Devices for Fixation of Position and Coincidence of Two Images"

Radiotekhnika, resp. mezhved. nauchno-tekhn. sb. (Radio Engineering, Republic Interdepartmental Scientific-Technical Collection of Works), 1969, Issue 8, pp 163-172 (from RZh-Elektronika i yeye primeneniye, No 1, Jan 70; Abstract No 1A426)

Translation: In systems of measurement of stabilization of the position of an objective in which the coordinates are represented by a linear interval between the images of two luminous lines, a precise fix of the limits of the interval or a precise coincidence of the image of the lines is necessary for automatic generation of the read-out signal. This is worked out by means of photoelectric devices with a scanning sweep and with the assistance of photometric following devices. In a system with a scanning sweep, the linear distance between the two lines with respect to the horizontal represented a measurable coordinate. For different images and the isolation of them on the background of light interference, an amplitude modulation of

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NOVIKOV, A. V., et al., Radio Engineering, Republic Inter-departmental Scientific-Technical Collection of Works, 1969, Issue 8, pp 163-172

the luminous flux is used, forming images of the lines. The luminous flux is modulated by different frequencies, transformed into electrical signals which are then detected, amplified, and are converted in a shaping system into a signal corresponding to the limits of the time interval proportionate to the coordinate. In view of the inequality of the original images of the lines, an error originates in determination of the time interval. Use of prism analyzers for the field of the images can partially or completely exclude this error. A description is presented of a system with scanning separating prism and a system with a follow-up separating prism and mobile images of the lines. The second system may be used in the case when for automatic stabilization of the angular position of the object it is necessary to superpose the images of the lines and the size of the images differ considerably one from the other. An estimated ratio is given for the optimum size of the hypotenuse of the face of the prism and for the increase of errors originating in both systems. Practical directions are given for a reduction of the errors. 8 ill. 3 ref.

N. M.



USSR

UDC 614.4.001.5(47) "1969"

SUMAROKOV, A. A., and YUSHCHENKO, G. V., Central Institute of Epidemiology

"Brief Results of Scientific-Research Work Done in 1969 On the Problem 'General Principles of the Epidemic Process: Scientific Basis for Reducing Infectious Morbidity and Eradicating Infections'"

Moscow, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, Vol 48, No 6, Jun 71, pp 141-145

Abstract: Research on such problems as the general principles governing the epidemic process and its control, methods of reducing infectious morbidity and eradicating infections, methods or prophylaxis of bacterial and viral diseases, organization of the study, mapping, and control of infectious foci, organization of the exchange of epidemiological information, and the role of disinfection and sterilization in the control of infections was carried out in 1969 in 83 USSR and republic institutes of microbiology, epidemiology, and hygiene, including the Central Institute of Epidemiology and the All Union Institute of Disinfection and Sterilization. A total of 320 papers on these themes were written. Topics of study included the prevalence of disease epidemics throughout the USSR as a whole and in large separate sections of

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SUMAROKOV, A. A., et al. Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, Vol 48, No 6, Jun 71, pp 141-145

the country during 1965-1968. The results of these studies served as the basis for a compilation of analytical and statistical data on the dynamics, level, and distribution of infectious in these years. Considerable attention was given to the investigation of paratyphoid and typhoid. It was found that paratyphoid epidemics are largely limited to paratyphoid B, with other types of paratyphoid occurring only sporadically. It was established also that chronic typhoid carriers differ from other people in their immunological reactivity, probably as a result of the constant immunological stress caused by the presence of the antigen. Considerable work has been done on shigellosis, typing strains, and distribution. Data concerning the transmission, spread, and methods of control of dysentery have been published. Experiments also established the prophylactic efficacy of bacteriophages in the control of dysentery in children. An epidemiological analysis of the morbidity of infectious hepatitis established the prophylactic efficacy of gamma-globulin vaccination of children aged 1-12; also the prophylactic efficacy of serum polyglobulin prepared at the Leningrad Institute of Hematology and Blood Transfusion. Principles of the laws governing the transmission and spread of

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SUMAROKOV, A. A., et al. Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, Vol 48, No 6, Jun 71, pp 141-145

diphtheria have been determined, and a decree concerning control of the disease was promulgated by the Ministry of Health USSR in April 1969. An investigation of pertussis established that the duration of vaccinal immunity to the infection is limited to 1-2 years, and that revaccination at intervals of not less than two years is necessary. Of the streptococcal infections, the chief attention was paid to scarlet fever. It was noted that in general there has been a decline in the incidence of the disease. A difference between the northern and southern regions of the country in the dynamics of drop in disease incidence due probably to the difference in the immunological structure of the organism, has been noted. Controlled epidemiological tests of live allantoic and cultural influenza vaccines established the ineffectiveness of these vaccines as prophylactic agents. The practical use of human interferon as a prophylactic agent against influenza is recommended. Modern communication systems such as the telegraph and teletype make possible the rapid transmission of epidemiological information to sanitary epidemiological stations and other antiepidemic establishments. An important role in epidemic control is played by disinfection and sterilization. A number of disinfectants against

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SUMAROKOV, A. A., et al, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii,  
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viral infections have been developed; measures for the control of staphy-  
lococcal infection in surgery have been adopted; measures to control blood-  
sucking insects in the petroleum-gas regions of Siberia and the Far East have  
been studied; and portable disinfection and extermination devices have been  
developed.

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